

ABSTRACT OF THE DISCLOSURE

The present invention provides ultra-wide band communication systems and methods, including multi-band ultra-wide band communication systems and methods. Methods and systems are provided in which frequency sub-bands of an ultra-wide band spectrum are
5 allocated for signal transmission. An ultra-wide band transmission including the information is sent, including sending a signal over each of the plurality of sub-bands.

Methods are further provided in which a first data signal containing information is converted into an encoded signal using an Inverse Fast Fourier Transform. The encoded signal is converted into an encoded ultra-wide band signal that can be pulsed or transmitted using burst
10 symbol cycles. The encoded pulsed ultra-wide band signal is decoded using a Fast Fourier Transform to obtain the information.